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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Previouly Amended) A system for dividing a single mass flow into two or more secondary flows of desired ratios, comprising:

A) an inlet adapted to receive the single mass flow;

B) at least two secondary flow lines connected to the inlet, each flow line including,

a flow meter measuring flow through the flow line and providing a signal indicative of the measured flow, and

a valve controlling flow through the flow line based upon a signal indicative of desired flow rate;

C) a user interface adapted to receive at least one desired ratio of flow; and

D) a controller connected to the flow meters, the valves, and the user interface, and programmed to,

receive the desired ratio of flow through the user interface,

receive the signals indicative of measured flow from the flow meters,

calculate an actual ratio of flow through the flow lines based upon the measured flow,

compare the actual ratio to the desired ratio,

calculate the desired flow through at least one of the flow lines if the actual ratio is unequal to the desired ratio, and

provide a signal indicative of the desired flow to at least one of the valves, wherein the desired flow is substantially equal to $K_p(\alpha - \alpha_{sp}) + K_i\int(\alpha - \alpha_{sp})_{dt}$, wherein K_p is a proportional gain, K_i is an integral gain, α is the actual flow ratio, and α_{sp} is the desired flow ratio.

12. (Canceled)

13. (Canceled)

14. (Previously Amended) A system for dividing a single mass flow into two or more secondary flows of desired ratios, comprising:

A) an inlet adapted to receive the single mass flow;

B) at least two secondary flow lines connected to the inlet, each flow line including,

a flow meter measuring flow through the flow line and providing a signal indicative of the measured flow, and

a valve controlling flow through the flow line based upon a signal indicative of desired flow rate;

C) a user interface adapted to receive at least one desired ratio of flow; and

D) a controller connected to the flow meters, the valves, and the user interface, and programmed to,

receive the desired ratio of flow through the user interface,

receive the signals indicative of measured flow from the flow meters,

calculate an actual ratio of flow through the flow lines based upon the measured flow,

compare the actual ratio to the desired ratio.

calculate the desired flow through at least one of the flow lines if the actual ratio is unequal to the desired ratio, and

provide a signal indicative of the desired flow to at least one of the valves, wherein the desired flow is substantially equal to $K_p(\alpha - \alpha_{sp}) + K_i\int(\alpha - \alpha_{sp})_{dt}$; and

E) a pressure sensor measuring pressure in the inlet and connected to the controller to provide the pressure measurement to the controller, wherein the controller is programmed to provide a signal indicative of the desired flow to the valve of the first flow line substantially equal to $K_{p\alpha}(\alpha - \alpha_{sp}) + K_{i\alpha}\int(\alpha - \alpha_{sp})_{dt}$, wherein K_p is a proportional gain for ratio control, K_i is an integral gain for ratio control, α is the actual flow ratio, and α_{sp} is the desired flow ratio.

15. (Previously Amended) A system for dividing a single mass flow into two or more secondary flows of desired ratios, comprising:

A) an inlet adapted to receive the single mass flow;

B) at least two secondary flow lines connected to the inlet, each flow line including,

a flow meter measuring flow through the flow line and providing a signal indicative of the measured flow, and

a valve controlling flow through the flow line based upon a signal indicative of desired flow rate;

C) a user interface adapted to receive at least one desired ratio of flow; and

D) a controller connected to the flow meters, the valves, and the user interface, and programmed to,

receive the desired ratio of flow through the user interface,

receive the signals indicative of measured flow from the flow meters,

calculate an actual ratio of flow through the flow lines based upon the measured flow,

compare the actual ratio to the desired ratio,

calculate the desired flow through at least one of the flow lines if the actual ratio is unequal to the desired ratio, and

provide a signal indicative of the desired flow to at least one of the valves, wherein the desired flow is substantially equal to $K_p(\alpha - \alpha_{sp}) + K_i\int(\alpha - \alpha_{sp})_{dt}$; and

E) a pressure sensor measuring pressure in the inlet and connected to the controller to provide the pressure measurement to the controller, wherein the controller is programmed to provide a signal indicative of the desired flow to the valve of the second flow line substantially equal to $K_p(P_{in} - P_t) + K_i\int(P_{in} - P_t)_{dt}$, wherein K_p is a proportional gain for pressure control, K_i is an integral gain for pressure control, P_{in} is the measured inlet pressure, and P_t is an operating pressure threshold.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Previously amended) A method for dividing a single mass flow into two or more secondary mass flows of desired ratios, comprising:

A) dividing a single mass flow into at least two flow lines;

B) measuring mass flow through each flow line;

C) receiving at least one desired ratio of mass flow;

D) calculating an actual ratio of mass flow through the flow lines based upon the measured flows;

E) calculating a desired flow through at least one of the flow lines if the actual ratio does not equal the desired ratio; and

F) regulating the flow line to the desired flow, wherein the desired flow is substantially equal to $K_p(\alpha - \alpha_{sp}) + K_i\int(\alpha - \alpha_{sp})_{dt}$, wherein K_p is a proportional gain, K_i is an integral gain, α is the actual flow ratio, and α_{sp} is the desired flow ratio.

27. (Canceled)

28. (Canceled)

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29. (Previously amended) A method for dividing a single mass flow into two or more secondary mass flows of desired ratios, comprising:

A) dividing a single mass flow into at least two flow lines;

B) measuring mass flow through each flow line;

C) receiving at least one desired ratio of mass flow;

D) calculating an actual ratio of mass flow through the flow lines based upon the measured flows;

E) calculating a desired flow through at least one of the flow lines if the actual ratio does not equal the desired ratio;

F) regulating the flow line to the desired flow; and

G) measuring pressure in the inlet, wherein the desired flow in one of the flow lines is substantially equal to $K_{p\alpha}(\alpha - \alpha_{sp}) + K_{i\alpha}\int(\alpha - \alpha_{sp})_{dt}$, wherein K_p is a proportional gain for ratio control, K_i is an integral gain for ratio control, α is the actual flow ratio, and α_{sp} is the desired flow ratio.

30. (Previously amended) A method for dividing a single mass flow into two or more secondary mass flows of desired ratios, comprising:

A) dividing a single mass flow into at least two flow lines;

B) measuring mass flow through each flow line;

C) receiving at least one desired ratio of mass flow;

D) calculating an actual ratio of mass flow through the flow lines based upon the measured flows;

E) calculating a desired flow through at least one of the flow lines if the actual ratio does not equal the desired ratio;

F) regulating the flow line to the desired flow; and

G) measuring pressure in the inlet, wherein the desired flow in one of the flow lines is substantially equal to $K_p(P_{in} - P_t) + K_i\int(P_{in} - P_t)_{dt}$, wherein K_p is a proportional gain for pressure control, K_i is an integral gain for pressure control, P_{in} is the measured inlet pressure, and P_t is an operating pressure threshold.

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)